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EXAMINER	
COLUCCI, MICHAEL C	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/727,886	Applicant(s) RAJPUT ET AL.	
	Examiner MICHAEL C. COLUCCI	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-21 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-21 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/27/2009 has been entered.

Response to Arguments

2. Applicants arguments with respect to claims 1-21 have been considered but are moot in view of the new grounds of rejection. After further analysis of the claims in light of the specification, and all previous Remarks, as well as the prior art of record, Examiner ha withdrawn Kantrowitz US 6292772 B1. Though, Kantrowitz teaches mixed language analysis, Examiner believes Kantrowitz lacks a thorough realization of probabilities relevant to word prediction and language conversion in the manner claimed. Examiner has instead incorporated Lee et al. US 6848080 B1 (hereinafter Lee) to address limitations pertaining to mixed language text and word prediction together. Lee is within the scope of the present invention and explicitly teaches the input of a mixed or single language and output of a single language to avoid user intervention, wherein probabilistic models as well as language models are used to

predict the next word and/or characters of text. This is directly parallel to the teaching of the present invention (Spec. page 4).

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-7 are rejected under 35 U.S.C. 101 because:

Claims 1-7 do not fall within one of the four statutory categories of invention. Supreme Court precedent[1] and recent Federal Circuit decisions[2] indicate that a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim(s) recite a series of steps or acts to be performed, the claim(s) neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process.

Claims 1-7 recite purely mental steps and would not qualify as a statutory process. In order to qualify as a statutory process, the method claim should positively recite the other statutory class to which it is tied (i.e. apparatus, device, product, etc.). For example, the method steps of claim 1 appear to recite mental steps such as

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[1] *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

[2] *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

“language modeling for mixed language expressions… generating a monolingual word history…” and do not identify an apparatus that performs the recited method steps, such as the computer as described in the specification (present invention page 11).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-21 rejected under 35 U.S.C. 103(a) as being unpatentable over Bahl et al., "A tree-based statistical language model for natural language speech recognition" (hereinafter Bahl) in view of Lee et al. US 6848080 B1 (hereinafter Lee).

Re claims 1, 8, and 9, Bahl teaches generating a monolingual word history in the first language based upon a mixed language word history and using the stored word equivalence probabilities, wherein said mixed language word history comprises words in said first language and words in said at least one other language, and wherein said mixed language word history and said monolingual word history each comprise a history of previous words in a sentence-based word sequence (Page 1001 Col. 2);

generating monolingual next word hypothesis probabilities (Page 1002 Col. 2) in the first language based upon the monolingual word history (Page 1001 Col. 2), wherein

said monolingual next word hypothesis probabilities predict a next word in said word sequence (Page 1006 Col. 1 paragraphs 1-3);

determining a probability of a next word (Page 1002 Col. 2) in a mixed language expression based upon the monolingual next word hypothesis probabilities and the stored word equivalence probabilities (Page 1001 Col. 2), wherein said probability of said next word predicts a next word in said mixed language expression

However, though Bahl teaches single language word prediction, Bahl fails to teach storing word equivalence probabilities relating to words of a first language and words in at least one other language

generating a monolingual word history in the first language based upon a mixed language word history

said probability of said next word predicts a next word in said mixed language expression

Lee teaches limitations that concerns switching modes between two languages in order to input words from the different language into the same text. It is common, for example, to draft a document in Chinese that includes English words, such as technical terms (e.g., Internet) and terms that are difficult to translate (e.g., acronyms, symbols, surnames, company names, etc.). Conventional word processors require a user to switch modes from one language to the other language when entering the different words. Thus, when a user wants to enter a word from a different language, the user must stop thinking about text input, switch the mode from one language to another, enter the word, and then switch the mode back to the first language. This significantly

reduces the user's typing speed and requires the user to shift his/her attention between the text input task and an extraneous control task of changing language modes. Accordingly, there is a need for a "modeless" system that does not require mode switching. To avoid modes, the system should be able to detect the language that is being typed, and then convert the letter sequence to one language or the other, dynamically, on a word-by-word basis (Lee Col. 3 lines 14-35).

Further, Lee teaches a language input architecture converts input strings of phonetic text (e.g., Chinese Pinyin) to an output string of language text (e.g., Chinese Hanzi) in a manner that minimizes typographical errors and conversion errors that occur during conversion from the phonetic text to the language text. The language input architecture may be implemented in a wide variety of areas, including word processing programs, email programs, spreadsheets, browsers, and the like. In one implementation, the language input architecture has a user interface to receive in input string of characters, symbols, or other text elements. The input string may include phonetic text and non-phonetic text, as well as one or more languages. The user interface allows the user to enter the input text string in a single edit line without switching modes between entry of different text forms or different languages. In this manner, the language input architecture offers modeless entry of multiple languages for user convenience (Lee Col. 4 lines 1-17).

Furthermore, Lee teaches mutually dependent probability of two language as well as individual probabilities of one language (Lee Col. 9 lines 58-65), wherein the next characters and sequence of words are predicted (Lee Col. 11 lines 2-17).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Bahl to incorporate language modeling, storing word equivalence probabilities relating to words of a first language and words in at least one other language, generating a monolingual word history in the first language based upon a mixed language word history, and a probability of said next word that predicts a next word in said mixed language expression as taught by Lee to allow for the elimination of user intervention during language translation, wherein well known word prediction techniques (Lee Col. 11 lines 2-17). can be combined to be applicable to the combination of one language from a mixed language document to accommodate the reader of a document that speaks one language better than another (Lee Col. 3 lines 14-35).

Re claims 2, 10, and 16, Bahl teaches the method as claimed in claim 1, further comprising summing products of word equivalence probabilities with respective monolingual next word hypothesis probabilities (Page 1002 Col. 2).

Re claims 3, 11, and 17, Bahl teaches the method as claimed in claim 1, wherein the monolingual next word (Page 1002 Col. 2) hypothesis probability is a statistical language model (Page 1001 Col. 1).

Re claims 4, 12, and 18, Bahl fails to teach the method as claimed in claim 1, further comprising converting a mixed language word sequence to a monolingual word sequence using word equivalence probabilities

Lee teaches limitations that concerns switching modes between two languages in order to input words from the different language into the same text. It is common, for example, to draft a document in Chinese that includes English words, such as technical terms (e.g., Internet) and terms that are difficult to translate (e.g., acronyms, symbols, surnames, company names, etc.). Conventional word processors require a user to switch modes from one language to the other language when entering the different words. Thus, when a user wants to enter a word from a different language, the user must stop thinking about text input, switch the mode from one language to another, enter the word, and then switch the mode back to the first language. This significantly reduces the user's typing speed and requires the user to shift his/her attention between the text input task and an extraneous control task of changing language modes. Accordingly, there is a need for a "modeless" system that does not require mode switching. To avoid modes, the system should be able to detect the language that is being typed, and then convert the letter sequence to one language or the other, dynamically, on a word-by-word basis (Lee Col. 3 lines 14-35).

Further, Lee teaches a language input architecture converts input strings of phonetic text (e.g., Chinese Pinyin) to an output string of language text (e.g., Chinese Hanzi) in a manner that minimizes typographical errors and conversion errors that occur during conversion from the phonetic text to the language text. The language input

architecture may be implemented in a wide variety of areas, including word processing programs, email programs, spreadsheets, browsers, and the like. In one implementation, the language input architecture has a user interface to receive in input string of characters, symbols, or other text elements. The input string may include phonetic text and non-phonetic text, as well as one or more languages. The user interface allows the user to enter the input text string in a single edit line without switching modes between entry of different text forms or different languages. In this manner, the language input architecture offers modeless entry of multiple languages for user convenience (Lee Col. 4 lines 1-17).

Furthermore, Lee teaches mutually dependent probability of two language as well as individual probabilities of one language (Lee Col. 9 lines 58-65), wherein the next characters and sequence of words are predicted (Lee Col. 11 lines 2-17).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Bahl to incorporate converting a mixed language word sequence to a monolingual word sequence using word equivalence probabilities as taught by Lee to allow for the elimination of user intervention during language translation, wherein well known word prediction techniques (Lee Col. 11 lines 2-17). can be combined to be applicable to the combination of one language from a mixed language document to accommodate the reader of a document that speaks one language better than another (Lee Col. 3 lines 14-35).

Re claims 5, 13, and 19, Bahl teaches the method as claimed in claim 1, further comprising determining the word equivalence probabilities (Page 1001 Col. 2).

However, Bahl fails to teach a parallel text corpus that has corresponding expressions in the first language and the at least one other language

Lee teaches limitations that concerns switching modes between two languages in order to input words from the different language into the same text. It is common, for example, to draft a document in Chinese that includes English words, such as technical terms (e.g., Internet) and terms that are difficult to translate (e.g., acronyms, symbols, surnames, company names, etc.). Conventional word processors require a user to switch modes from one language to the other language when entering the different words. Thus, when a user wants to enter a word from a different language, the user must stop thinking about text input, switch the mode from one language to another, enter the word, and then switch the mode back to the first language. This significantly reduces the user's typing speed and requires the user to shift his/her attention between the text input task and an extraneous control task of changing language modes. Accordingly, there is a need for a "modeless" system that does not require mode switching. To avoid modes, the system should be able to detect the language that is being typed, and then convert the letter sequence to one language or the other, dynamically, on a word-by-word basis (Lee Col. 3 lines 14-35).

Further, Lee teaches a language input architecture converts input strings of phonetic text (e.g., Chinese Pinyin) to an output string of language text (e.g., Chinese Hanzi) in a manner that minimizes typographical errors and conversion errors that occur

during conversion from the phonetic text to the language text. The language input architecture may be implemented in a wide variety of areas, including word processing programs, email programs, spreadsheets, browsers, and the like. In one implementation, the language input architecture has a user interface to receive in input string of characters, symbols, or other text elements. The input string may include phonetic text and non-phonetic text, as well as one or more languages. The user interface allows the user to enter the input text string in a single edit line without switching modes between entry of different text forms or different languages. In this manner, the language input architecture offers modeless entry of multiple languages for user convenience (Lee Col. 4 lines 1-17).

Furthermore, Lee teaches mutually dependent probability of two language as well as individual probabilities of one language (Lee Col. 9 lines 58-65), wherein the next characters and sequence of words are predicted (Lee Col. 11 lines 2-17).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Bahl to incorporate a parallel text corpus that has corresponding expressions in the first language and the at least one other language as taught by Lee to allow for the elimination of user intervention during language translation, wherein well known word prediction techniques (Lee Col. 11 lines 2-17). can be combined to be applicable to the combination of one language from a mixed language document to accommodate the reader of a document that speaks one language better than another (Lee Col. 3 lines 14-35).

Re claims 6, 14, and 20, Bahl teaches the method as claimed in claim 1, further comprising determining a probability of a next word (Page 1002 Col. 2) hypothesis given a base language word history (Page 1001 Col. 2).

However, Bahl fails to teach probabilities of a foreign language given a base language

Lee teaches limitations that concerns switching modes between two languages in order to input words from the different language into the same text. It is common, for example, to draft a document in Chinese that includes English words, such as technical terms (e.g., Internet) and terms that are difficult to translate (e.g., acronyms, symbols, surnames, company names, etc.). Conventional word processors require a user to switch modes from one language to the other language when entering the different words. Thus, when a user wants to enter a word from a different language, the user must stop thinking about text input, switch the mode from one language to another, enter the word, and then switch the mode back to the first language. This significantly reduces the user's typing speed and requires the user to shift his/her attention between the text input task and an extraneous control task of changing language modes. Accordingly, there is a need for a "modeless" system that does not require mode switching. To avoid modes, the system should be able to detect the language that is being typed, and then convert the letter sequence to one language or the other, dynamically, on a word-by-word basis (Lee Col. 3 lines 14-35).

Further, Lee teaches a language input architecture converts input strings of phonetic text (e.g., Chinese Pinyin) to an output string of language text (e.g., Chinese

Hanzi) in a manner that minimizes typographical errors and conversion errors that occur during conversion from the phonetic text to the language text. The language input architecture may be implemented in a wide variety of areas, including word processing programs, email programs, spreadsheets, browsers, and the like. In one implementation, the language input architecture has a user interface to receive in input string of characters, symbols, or other text elements. The input string may include phonetic text and non-phonetic text, as well as one or more languages. The user interface allows the user to enter the input text string in a single edit line without switching modes between entry of different text forms or different languages. In this manner, the language input architecture offers modeless entry of multiple languages for user convenience (Lee Col. 4 lines 1-17).

Furthermore, Lee teaches mutually dependent probability of two language as well as individual probabilities of one language (Lee Col. 9 lines 58-65), wherein the next characters and sequence of words are predicted (Lee Col. 11 lines 2-17).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Bahl to incorporate probabilities of a foreign language given a base language as taught by Lee to allow for the elimination of user intervention during language translation, wherein well known word prediction techniques (Lee Col. 11 lines 2-17). can be combined to be applicable to the combination of one language from a mixed language document to accommodate the reader of a document that speaks one language better than another (Lee Col. 3 lines 14-35).

Re claims 7, 15, and 21, Bahl fails to teach the method as claimed in claim 1, further comprising using a parallel text corpus that has corresponding expressions in the first language and the at least one other language

Lee teaches limitations that concerns switching modes between two languages in order to input words from the different language into the same text. It is common, for example, to draft a document in Chinese that includes English words, such as technical terms (e.g., Internet) and terms that are difficult to translate (e.g., acronyms, symbols, surnames, company names, etc.). Conventional word processors require a user to switch modes from one language to the other language when entering the different words. Thus, when a user wants to enter a word from a different language, the user must stop thinking about text input, switch the mode from one language to another, enter the word, and then switch the mode back to the first language. This significantly reduces the user's typing speed and requires the user to shift his/her attention between the text input task and an extraneous control task of changing language modes. Accordingly, there is a need for a "modeless" system that does not require mode switching. To avoid modes, the system should be able to detect the language that is being typed, and then convert the letter sequence to one language or the other, dynamically, on a word-by-word basis (Lee Col. 3 lines 14-35).

Further, Lee teaches a language input architecture converts input strings of phonetic text (e.g., Chinese Pinyin) to an output string of language text (e.g., Chinese Hanzi) in a manner that minimizes typographical errors and conversion errors that occur

during conversion from the phonetic text to the language text. The language input architecture may be implemented in a wide variety of areas, including word processing programs, email programs, spreadsheets, browsers, and the like. In one implementation, the language input architecture has a user interface to receive in input string of characters, symbols, or other text elements. The input string may include phonetic text and non-phonetic text, as well as one or more languages. The user interface allows the user to enter the input text string in a single edit line without switching modes between entry of different text forms or different languages. In this manner, the language input architecture offers modeless entry of multiple languages for user convenience (Lee Col. 4 lines 1-17).

Furthermore, Lee teaches mutually dependent probability of two language as well as individual probabilities of one language (Lee Col. 9 lines 58-65), wherein the next characters and sequence of words are predicted (Lee Col. 11 lines 2-17).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Bahl to incorporate using a parallel text corpus that has corresponding expressions in the first language and the at least one other language as taught by Lee to allow for the elimination of user intervention during language translation, wherein well known word prediction techniques (Lee Col. 11 lines 2-17). can be combined to be applicable to the combination of one language from a mixed language document to accommodate the reader of a document that speaks one language better than another (Lee Col. 3 lines 14-35).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Colucci whose telephone number is (571)-270-1847. The examiner can normally be reached on 9:30 am - 6:00 pm, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571)-272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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